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Extended Research Article

Effectiveness of biomarker-guided duration of antibiotic treatment in children hospitalised with confirmed or suspected bacterial infection: the BATCH RCT

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Plain language summary

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Plain language summary

A daily task in hospitals is to assess whether sick children have an infection or not, and doctors need to decide whether to start, stop or change antibiotics. On one hand, giving antibiotics promptly saves lives, but on the other, giving antibiotics to people who do not need them leads to overuse of antibiotics resulting in antibiotics no longer working for infections, so-called antibiotic resistance. If we can reduce antibiotic use in hospitals, this would be an important step in combating the spread of hospital superbugs.

Blood tests can be used to measure the body's response to infection. Most hospitals in the National Health Service use blood tests to monitor whether a person is responding to antibiotics. One example is C-reactive protein, but this test does not always tell you whether there is an infection there and if it is getting better, or whether the person is just unwell from another reason. A blood test measuring procalcitonin is better for diagnosing bacterial infections, and procalcitonin levels are quicker to decrease when a patient starts to improve and antibiotics start working, compared to C-reactive protein levels. However, procalcitonin tests are not routinely used for children in the National Health Service.

The BATCH trial looked at whether the use of a procalcitonin test is safe and could help doctors decide whether to stop or change antibiotics (from intravenous to oral), both of which safely reduce antibiotic use (and help limit antibiotic resistance), compared to not using the test.

The trial found that in children admitted to hospital with a bacterial infection, the addition of the procalcitonin test is safe to use but does not reduce how long intravenous antibiotics were given for.

Doctors did not always use the procalcitonin result when making antibiotic decisions, and although parents were largely positive about participation in the trial, some had concerns about extra blood tests and clinicians stopping antibiotics too early. Future research should include education and training for doctors to ensure that the procalcitonin test forms part of routine care.

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